termine a point about which it would seem that much uncertainty existed, — the curious question of the effect of serpent-venom on the serpents themselves. In a paper he has published he quotes the contradictory conclusions arrived at by previous experimenters, and endeavors to show, that, from the accounts of the experiments, it by no means followed that death, when it occurred, was the result of auto-toxic action. Accordingly, he felt that the question was still open, and proceeded to some very interesting investigations, conducted under different conditions of temperature and season, verifying his results by control experiments upon other animals and by *post-mortem* examination of the snakes he employed. In every case the fresh venom was injected into the cobra with an ordinary hypodermic syringe; the serpents operated upon were all healthy, and had recently been caught; the snakes were kept under observation from nine to fifteen days subsequently, and were then killed. The experiments generally confirm and extend the principle formulated by Fontana in 1765, that the venom is neither a poison to the snake itself nor to those of its own species. This immunity is not to be explained upon the mere fact of the animal being cold-blooded, or upon the anatomical conformation of ophidians, since most, if not all, of the non-venomous snakes are susceptible to venom. Surgeon Waddell suggests that it may result from a toleration established through frequent imbibition of the venom in the modified or attenuated form which it assumes when mixed with salivary and gastric juices and absorbed through the alimentary canal; and in support of this hypothesis he mentions the popular belief that certain snake-charmers, by a process of inoculation with venom, gain protection against the bite of a particular species of venomous snake. If this hypothesis can be verified by further experiments, it will go far towards affording indications for combating the action of the venom on man. The subject is of such importance, and the experiments detailed appear so conclusive, that we look forward with interest to the further prosecution of this inquiry.

NOTES AND NEWS.

A SCHEME for bridging the English Channel has actually been discussed by the Iron and Steel Institute of Great Britain. The cost is set by the projectors at $170,000,000. The danger to navigation, aside from any considerations of cost, is likely to be enough of an objection to prevent the accomplishment of the project for many years to come.

— The International Medical Congress, we learn from *Nature*, will meet next year in Berlin, from Aug. 4 to Aug. 10. Inquiries by intending visitors should be addressed to the general secretary, Dr. Lassar, Karl Strasse, Berlin. The congress will be divided into eighteen sections, and the official languages will be German, English, and French.

— According to *Nature*, the Ethnographic Congress, which held meetings of its various sections every day of the week ending Oct. 5, in Paris, brought its proceedings to a close on Monday afternoon, Oct. 7, in one of the large halls of the College of France. It was decided that the congress should hold its next meeting at Bucharest in the autumn of 1890.

— At the first regular meeting of the Boston Society of Arts, held at the Institute of Technology, Oct. 10, the paper of the evening, as we learn from the *Boston Medical and Surgical Journal*, was upon "Biological or Chemical Water-Analysis," by Professor W. T. Sedgwick of the institute. He analyzed different waters, claiming that one-third of a teaspoonful of Cochituate water, tested by the gelatine process, contains sixty to one hundred bacteria, and yet is as pure as the average water. The State Board of Health was highly commended for its practical system of analyzing water. After an interesting exhibition of filtered waters and vegetable deposits through sand, the meeting was adjourned.

— The Philadelphia *Inquirer's* Pittsburgh special, Oct. 15, says, "That the natural-gas supply in that and adjoining districts has passed its zenith, and is now upon the wane, can no longer be satisfactorily denied. The reason usually given was that new mains were being laid to the wells, or that the size of those already down was being increased. These changes have all been made, and still the desired fuel does not pour through in the necessary quantities. This state of affairs was first noticed the latter part of last winter; but the coming of warm weather relieved the pressure for domestic purposes, and nothing was heard of a shortage during the summer months. But with the first appearance of a change of temperature this fall the trouble recommenced in an aggravated form. The last move of the natural-gas companies has been to ask the big mills to run only at night, when the demand upon the fuel for other purposes would be slight. Many of the establishments have decided to return to the use of coal, and some have already done so."

— The British consul-general at Constantinople, in his last report, refers to the declining commercial importance of that city. Its trade has suffered considerably since 1878, and more particularly during the past two years. Large wholesale houses which formerly did business with Persia and central Asia, and acted as middlemen between European manufacturers and the merchants of those parts, have in recent years lost their customers, and are gradually disappearing from the city. This is owing, in a measure, to new and more direct routes having been thrown open to markets that were formerly supplied from constantinople, and also to the fact that produce which used to go to the Turkish capital for shipment to Europe is now despatched direct from the outports. Persia, which previously drew a considerable part of her imports from Constantinople, has latterly commenced to make use of Bushire, and the entire import trade of lower Persia is at present centred in that place. The provinces of Azerbijan and Mazanderan alone continue to take their supplies by way of Constantinople, and then only when Russian competition permits of their doing so. The export trade of the city has suffered in a similar way. The produce of Turkish Kurdistan, estimated to amount to an annual value of £320,000, which two years ago went through the capital, is now shipped from Bagdad, — a route which is considered to be less expensive and safer. As regards Persian trade especially, Mr. Fawcett observes that during the years 1887–88 it was not satisfactory.

— Two items which appeared on p. 250 of our issue of the 11th inst. — one in relation to the deepest hole in the world, and the other touching the effect of gas on asphalt pavements — should have been credited to *The Engineering and Building Record*. A feature of this journal in which many of our readers would be interested is the insert architectural drawing given each week. These drawings are remarkably well chosen, and are reproduced and printed especially well.

— The *Engineering and Mining Journal* announces that a movement has been started to erect a monument to the joint memories of Fulton and Ericsson in Trinity Churchyard, New York. The idea originated out of an application which has been made, and which is likely to be granted, for the interment of the great Swedish inventor's remains in the Livingston Manor vault, which would, as it happens, place them immediately next to the grave of Robert Fulton, so that a joint memorial would seem to be especially appropriate.

— The National Council of the Phi Beta Kappa Society, at its triennial meeting at Saratoga in September, appointed a committee to consider means of securing, in connection with the proposed national commemoration of the discovery of America in 1892, "a proper representation of the intellectual life of the American people, as manifested by their progress in science and literature." The committee was instructed especially to consider, according to *The Publishers' Weekly*, the preparation of a "monumental work," to comprise a series of monographs on the progress of our people, during the four centuries since the discovery by Columbus, in science and literature. The committee was authorized to offer two prizes, of $3,000 each, "for the best general essays on the progress of science and literature respectively; such essays to embrace a philosophical discussion of the development in the past and of the outlook for the future." The committee appointed is a thoroughly competent and admirably representative one, its members being Bishop Henry C. Potter, chairman; President Eliot of Harvard University; President Dwight of Yale; President Gilman of Johns Hopkins; President Adams of Cornell; President Angell of the University of Michigan; and President Northrup of the University of Minnesota.

— Attempts to prevent the formation of smoke have hitherto mainly had reference to the grate or furnace. Recently there has been exhibited in London a method in which the coal before use is treated chemically, by a process the details of which we have not learned, but which results in no deterioration of the heat-producing qualities of the coal, while it prevents its burning with an excess of smoke. The coal seems to be hardened by this process, which is said to cost not more than twelve cents a ton.

— Professors L. H. Baily, E. S. Goff, and W. H. Green were appointed at the last meeting of the Association of Agricultural Colleges and Experiment Stations to report on the nomenclature of kitchen-garden vegetables. In their report, just issued by the Department of Agriculture, and summarized in *Garden and Forest*, after stating that a name is bestowed upon a plant solely for the purpose of designating, and not for describing it, the committee lay down the following rules: 1. The name of a variety should consist of a single word, or at most of two words. A phrase, descriptive or otherwise, is never allowable; as, "Pride of Italy," "King of Mammoths," "Earliest of All." 2. The name should not be superlative or bombastic. In particular, all such epithets as "New," "Large," "Giant," "Fine," "Selected," "Improved," and the like, should be omitted. If the grower or dealer has a superior stock of a variety, the fact should be stated in the description immediately after the name rather than as a part of the name itself; as, "Trophy, selected stock." 3. If a grower or dealer has procured a new select strain of a well-known variety, it shall be legitimate for him to use his own name in connection with the established name of the variety; as, "Smith's Winningstadt," "Jones' Cardinal." 4. When personal names are given to varieties, titles should be omitted; as, "Major," "General," "Queen." 5. The term "hybrid" should not be used, except in those rare instances in which the variety is known to be of hybrid origin. 6. The originator has the prior right to name the variety; but the oldest name which conforms to these rules should be adopted. 7. This committee reserve the right, in their own publications, to revise objectionable names in conformity with these rules.

— The following description of the way in which floating fields and gardens are formed in China is from an article by Dr. Macgowan, in the *China Review*: "In the month of April, a bamboo raft, ten to twelve feet long and about half as broad, is prepared. The poles are lashed together with interstices of an inch between each. Over this a layer of straw an inch thick is spread, and then a coating two inches thick of adhesive mud taken from the bottom of a canal or pond, which receives the seed. The raft is moored to the bank in still water, and requires no further attention. The straw soon gives way, and the soil also, the roots drawing support from the water alone. In about twenty days the raft becomes covered with the creeper *Ipomœa reptans*, and its stems and roots are gathered for cooking. In autumn its small, white petals and yellow stamens, nestling among the round leaves, present a very pretty appearance. In some places marshy land is profitably cultivated in this manner. Besides these floating vegetable-gardens, there are also floating rice-fields. Upon rafts constructed as above, weeds and adherent mud were placed as a flooring; and when the rice shoots were ready for transplanting, they were placed in the floating soil, which being adhesive, and held in place by weed-roots, the plants were maintained in position throughout the season. The rice thus planted ripened in from sixty to seventy in place of a hundred days. The rafts are cabled to the shore, floating on lakes, pools, or sluggish streams. These floating fields served to avert famines, whether by drought or flood. When other fields were submerged, and their crops rotten, these floated and flourished; and when a drought prevailed, they subsided with the falling water, and, while the soil around was arid, advanced to maturity. Agricultural treatises contain plates representing rows of extensive rice-fields moored to sturdy trees on the banks of rivers or lakes which existed formerly in the lacustrine regions of the Lower Yangtsze and Yellow Rivers."

— A method for coating porcelain with platinum is described as follows: The porcelain is first covered with platinum chloride to which a little hydrochloric acid has been added. It is then exposed in a muffle to a temperature of 1,000°–1,200° for twenty minutes. This operation is repeated till a sufficient coating is secured.

— President D. C. Gilman has gone abroad for an absence of some months. While he is away, Professor Ira Remsen will act as president of Johns Hopkins University.

— At the close of the Paris exposition the Belgian exhibits will be mainly transferred to London, where they will form part of a Belgian exhibition to be opened next year. It is to be feared, if we may judge from the emptiness of the Spanish exhibition in London, that this special exhibit may not prove financially successful.

— In Sweden, which boasts being the fatherland of modern explosives, a considerable amount of time and attention is constantly given to experiments in this direction; and an engineer, Mr. J. W. Skoglund, has recently invented a new explosive, which so far, according to *Engineering*, has given great satisfaction. It is called "gray powder" (Swedish grakrut), and has during the summer been tested at Rosersberg Gunnery School, in addition to which it will be further tested in the course of the present month by a special commission, and to a considerable extent for comparison with a Belgian powder called *poudre de papier*. It has also been accepted for trials at the fleet. According to the official reports, the gray powder has been used with 25-millimetre as well as with Nordenfelt's machine guns. The former has, with 70 per cent of the new powder against 100 per cent (or the usual charge) of ordinary powder, given a 33 per cent greater initial velocity, without the pressure in the gun being increased more than 5 per cent. With 62 per cent (ordinary charge weight) of gray powder, the initial velocity was increased with 24 per cent without any perceptible increase in pressure. With a charge of 74 per cent (ordinary charge weight) the initial velocity was increased 40 per cent, without the gun being subject to any undue pressure. With regard to the important question of smokelessness, the report states, that, while with Nordenfelt's machine-guns smoke of ordinary powder remains for twenty-five seconds, the gray powder only leaves a transparent steam, which is only visible for five seconds.

— It is satisfactory to learn, on the authority of M. Gulishambaroff, that there is not the slightest ground for the absurd rumor, set in circulation by the acting consul at Batoum, that the Baku oil-supply had begun to show signs of exhaustion. M. Gulishambaroff is the chief petroleum adviser of the Russian Government, and recently has been conducting an investigation into the oil-industry of this country, in conjunction with Mr. Marvin. Having only just arrived from Baku, after one of his regular official visits, he is in a position to speak with authority on the position of affairs in that quarter, irrespective to that general knowledge of the Baku industry, from the earliest time of its European development, which has resulted in the publication of so many books on the subject. So far from there having been a "cave-in" of the supply, says *Engineering*, there has really been a "shut-down" of a large number of wells, to check a wasteful over-production. Instead of 500, only 200 wells have been at work this autumn. Moreover, in order to put a stop to the waste of oil on the surface, the Russian Government has been lately discouraging the commencement of new wells outside the present limit. Administrative action of this sort has long been advocated by Marvin and other non-Russian writers, as well as by Russians themselves. It is no uncommon thing for a native of Baku to tap a supply of 20,000,000 gallons of oil, and waste 19,000,000 out of it, simply from want of foresight in providing a cap for the well, or by the omission to arrange for surface storage. Waste of this character has become such a scandal that to check it the authorities now seize a well that is not properly managed, and empower the neighboring well-owners to gag the supply at the culprit's cost. In view of the rapid increase in the demand for petroleum, it is a satisfaction to know that Baku is as prolific of oil as ever. The oil-trade is rapidly assuming such gigantic proportions that for many a year there will probably be ample room for America, Russia, and Burmah, as well as for the minor fields that will in time furnish a supply for the world's market. But, in any case, petroleum ought not to be wasted as it has been at Baku, and it will be a good thing for Russia when the more careful and economical methods of America are adopted in the Caspian region.